Remarks

Claims 1-7 and 21-27 were pending in the application. No claims were cancelled, amended or added. Therefore, claims 1-7 and 21-27 are still pending.

Applicants thank the examiner for withdrawing the previous claim objections and the rejections under 35 U.S.C. § 112, second paragraph, and under 35 U.S.C. § 102(a).

Finality of the Office action

Applicants request that the finality of the Office action be reconsidered. The October 21, 2003 Office action raises several new rejections under 35 U.S.C. §§ 102(b) and 103. All of these new rejections could have been made in the previous Office action. It is asserted in paragraph 13 of the outstanding Office action that the Applicants' amendment necessitated the new grounds of rejection. However, the amendments were only made to dependent claims and were not substantive. For example, claims 4 and 5 were amended to correct a typographical error (the term "weight" was changed to "weights"), in claim 23 the phrase "comprises a label" was changed to "is labeled" to clarify the claim, and in claim 25, the phrase "wherein the composition is in a vessel or on a solid phase" was added to clarify the claim.

Under MPEP § 706.07(a), "second ... actions on the merits shall be final, except where the examiner introduces a new grounds of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement...." (emphasis added). None of the new rejections under 35 U.S.C. §§ 102(b) and 103 are based on the prior amendments described above, nor on a new information disclosure statement.

For example, claim 1, directed to a composition that includes an isolated adult *T. solium* excretory/secretory polypeptide, has not been amended during prosecution of this application. However, claims 1-7, 21-22 and 25 were newly rejected as anticipated by Varma *et al.* (1986), on the ground that Varma *et al.* disclose a composition that includes adult *T. solium* crude antigens, which is concluded to inherently include a mixture of excretory/secretory polypeptides. Since claim 1 has not been amended, and because Varma *et al.* was cited in the information disclosure statement originally filed with the application, a rejection of claim 1 based on Varma *et al.* could have been made in the first Office action, but it was not. Instead, a new rejection was introduced which was not necessitated

by the amendments described above.

For these reasons, the finality of the rejection is improper, and Applicants request that it be withdrawn.

Rejections under 35 U.S.C. § 102(b)

Claims 1-7, 21-22, and 25 were newly rejected under 35 U.S.C. § 102(b) as anticipated by Varma *et al.* (*Indian J. Animal Sci.* 56:621-7, 1986). Claims 1 and 21-25 remain rejected under 35 U.S.C. § 102(b) as anticipated by McManus (*Papua New Guinea Med. J.* 38:287-94, 1995). Applicants respectfully request reconsideration because these documents do not disclose all elements of the claims as required by § 102(b). As was found in the parent application (which was directed to methods of using the currently claimed antigens), Varma *et al.* and McManus are distinguishable over the claimed invention. Therefore, the claims are not anticipated by these references.

Varma *et al.* discloses a method for diagnosing *T. solium* infection, in one example using *crude T. solium whole worm* antigen to detect serum antibodies. The claims of the present invention are directed to using *isolated* adult-specific *excretory/secretory T. solium* antigens, *not crude whole worm* antigens.

As noted on page 627 of Varma *et al.*, the antigens used therein were crude, not isolated, thus decreasing the sensitivity and specificity of assays in which they are used. In contrast, claims of the present invention are directed to *isolated* adult-specific *excretory/secretory T. solium* antigens. Such isolated antigens can increase the sensitivity and specificity of assays in which they are used.

The whole worm antigens disclosed in Varma *et al.* are *not* the isolated adult-specific excretory/secretory antigens of the present invention. As disclosed in Varma *et al.* (p. 621), whole worm antigens are obtained by homogenizing whole adult worms and identifying antigens in the homogenate. In contrast, excretory/secretory antigens are obtained by growing the adult worms in a media, allowing the worm to secrete antigens into the media, *discarding the worms,* collecting the antigens that were secreted into the media, and identifying excretory/secretory antigens present in the supernatant (see specification page 17, line 19 – page 18, line 18). Since the whole worms are removed, there are no whole worm antigens present in the supernatant; only excretory/secretory antigens that were excreted/secreted by the adult worms into the supernatant. Furthermore, because

excretory/secretory *T. solium* proteins are excreted/secreted from the whole worm as soon as they are made, the excretory/secretory antigens of the present invention are not associated with the whole worm. Therefore, the isolated excretory/secretory antigens of the present invention are not anticipated by the crude whole worm antigens disclosed in Varma *et al.* under §102(b). Furthermore, kits including the isolated excretory/secretory antigens of the present invention are not anticipated by kits including crude whole worm antigens disclosed in Varma *et al.* under §102(b).

It is contended in the Office action that adult excretory/secretory antigens would have been present in the mixture of whole worm antigens. This is highly unlikely as excretory/secretory antigens are excreted/secreted immediately after they are translated, and would therefore not be present in the whole worm preparations of Varma *et al.*. Even if the excretory/secretory antigens were present in Varma *et al.*'s mixture of whole worm antigens, the excretory/secretory antigens would be in a highly diluted form, and not the isolated form required by claim 1.

McManus discloses an immunoassay for diagnosis of *cysticercosis,* the *larval* form (*not* the adult form) of the disease. The seven glycoprotein fractions disclosed in McManus are *not* the adult proteins of the claimed invention, because as stated in McManus on page 289, lines 4-8, the glycoproteins were identified from *T. solium* cysts *not* adult worms. Cyst antigens are *not* excretory/secretory antigens, such as the isolated antigens claimed by the Applicants. Cystic antigens are those obtained from a cyst homogenate. In contrast, excretory/secretory antigens are obtained by growing the whole worm in a media, allowing the worm to excrete/secrete antigens into the media, removing the whole worms, and collecting the antigens that were excreted/secreted into the media.

It is contended in the Office action that there are no structural characteristics that differentiate between larval and adult peptides. However, evidence that larval and adult peptides are different is presented on page 298 of McManus (first column, first paragraph). McManus states that when larval peptides are used, a discrimination *cannot* be made between patients infected with the adult *T. solium* tapeworm or the cystic form. It is important to be able to distinguish patients having the adult or larval form of *T. solium* infection, because they require different methods of treatment (see page 11, lines 7-13 of the present application). Similarly, Varma *et al.* note on page 622 (second column, first full paragraph), that crude whole worm (adult) *T. solium* antigens were better able to detect taeniasis than cyst (larval) antigens. Furthermore, McManus states that when larval peptides are used in an assay, a

discrimination *cannot* be made between *T. solium* and *T. saginata* taeniasis.

In contrast, the claimed compositions can discriminate between patients having a larval or adult *T. solium* infection (see page 4, lines 29-32; page 11, lines 2-26; and Table 1 on page 22 of the present application) and can discriminate between patients having *T. solium* and *T. saginata* taeniasis (see page 5, lines 18-20; page 8, lines 1-7; and Table 1 on page 22 of the present application), due to the specificity of the claimed isolated adult *T. solium* excretory/secretory antigens.

Therefore, the functional differences clearly demonstrate that the antigens disclosed in McManus and the claimed compositions are not the same and therefore McManus does not anticipate the claims under §102(b). The references relied upon by the examiner provide abundant evidence that the adult and larval peptides are different.

The claims of the present application call for an isolated, adult-specific excretory/secretory antigen that is simply not shown in Varma *et al.* or and McManus. Hence, the claimed compositions and kits are neither disclosed nor suggested by Varma *et al.* Because the § 102(b) rejections are improper, Applicants request that they be withdrawn.

Rejections under 35 U.S.C. § 103(a)

Claims 1-7 and 21-27 were rejected under 35 U.S.C. § 103(a) as obvious in view of McManus or Varma *et al.* in view of Zuk *et al.* (U.S. Patent No. 4,281,061). As discussed above, neither Varma *et al.* nor McManus disclose *isolated adult-specific* excretory/secretory polypeptides, which are the subject of the present invention. A *prima facie* case of obviousness has not been established because none of the references, either alone or in combination, suggests using the *isolated, adult* peptide of claim 1. Therefore, neither Varma *et al.* nor McManus when combined with Zuk *et al.,* which teaches immunoassay kits, render the present invention obvious.

Furthermore, the isolated, adult peptides of the present invention provide unexpectedly superior results, because they have the ability to distinguish adult from larval *T. solium* infection, and can distinguish *T. solium* and *T. saginata* taeniasis. As shown in Table 1 of the present application (page 22), the isolated adult antigens have high specificity for detecting *T. solium* taeniasis. As discussed above, the references relied upon in the Office action discuss the shortcomings of the peptides of the prior art, which could not distinguish adult from larval *T. solium* infection and could not distinguish *T.*

solium and *T. saginata* taeniasis.

This amendment places the application in condition for immediate allowance, and Applicants therefore respectfully requests that it be entered. If the Examiner believes any minor matters remain to be resolved, she is encouraged to contact the undersigned.

Respectfully submitted,

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